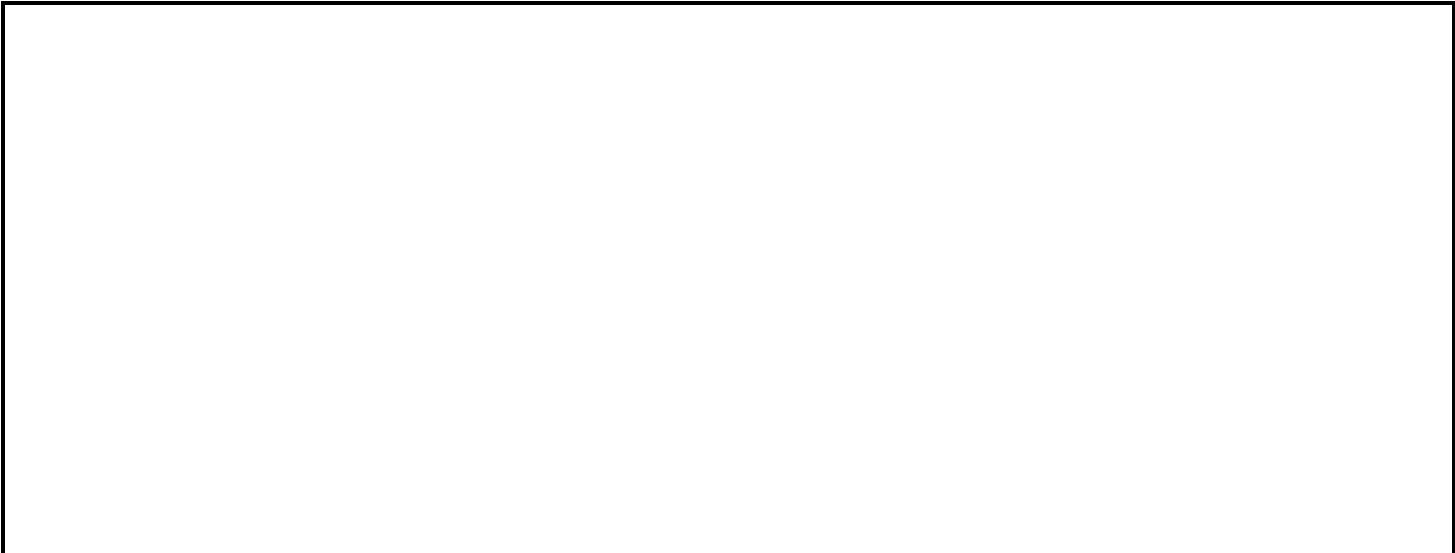


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Technical Specification for Thickener



01	2024/01/06	Issued For Approval				
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1. GENERAL

1.1. Introduction

This project involves the engineering and construction of a new mineral processing facility, designated as “Phase 3,” dedicated to copper and molybdenum concentration as a primary and byproduct recovery operation.

The facility is engineered to process mineral ore with the following operational capacity parameters:

- Nominal Capacity: 2,340 dry tonnes per hour (dtph) of fresh ore feed.
- Design Capacity: 2,700 dry tonnes per hour (dtph) of fresh ore feed.

The plant design configuration incorporates sufficient operational flexibility and redundancy to ensure reliable performance under “Maximum” throughput conditions, adhering to the specified design capacity requirements.

1.2. Scope

This specification defines the minimum requirements for the design, manufacture, inspection and testing of Conc. And Tailing Thickener in Phase III Copper-Moly concentrate plant project with regard to following table. In addition to requirements of this criteria, work shall be done in accordance with recognized and accepted theories, methods, codes, standards and good engineering practice. It should be noted that all Engineering (Detail Design), Procurement and Construction activities must be done by Contractor, based on Project Design Criteria, Specifications and engineering documents approved by Employer. Contractor should be assured about using last revision of all documents. All activities must be done base on contract documents by contractor and should be submitted to Employer for review and approval.

No.	TAG	ITEM	CAPACIT	Qty.
1	35-3303-01&02	THAILING THICKENER	T.B. F	2

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2	34-3301-01	Conc THICKENER	T.B. F	1
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1.3. Regulations and reference documents

The work shall be done in accordance with the national and local laws and regulations. For subjects not covered by regulations or specifications, the design and construction shall be based on good engineering and working practice and shall be subject to approval by EMPLOYER in written.

The contractor shall inform the EMPLOYER in case of any deviation from the requirements of these criteria and specification which is considered necessary, in order to comply with national/local regulations.

1.4. Occupational Health and Safety

The Contractor shall adopt safe systems of work which minimise the risk to health and safety. All persons working on the site shall be competent to carry out their tasks and duties safely and in a manner that will not endanger their own health nor the health of others. Persons, when first employed on the site, shall be subject to appropriate pre-employment occupational health checks, instructed on the hazards inherent in the site, precautions to be taken, the form of construction, and emergency procedures and fire safety. Such instructions shall be given whenever there is a material change in the working arrangements. The Contractor shall maintain a record of all persons instructed and each person shall be required to sign such record confirming that instruction has been received. No person shall be permitted on site without being inducted as set out above. The Contractor shall prepare a written statement of Safe Systems of Working which shall be issued to all persons at site.

1.5. Codes & Standards

Design, developed work, and materials in use shall be according to the last version of the relevant standards and codes from the following organizations:

ABMA Anti-Friction Bearing Manufacturers Association

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AGMA	American Gear Manufacturers Association
ANSI	American National Standards Institute (for flange connections, couplings, fasteners, etc.)
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials (For pipes, standard parts and materials, material specifications, lab. test methods)
AWS	American Welding Society
ISA	Instrument Society of America
ISO 12944	Paints and varnishes- Corrosion protection of steel structures by protective paint systems
IEC60027	Letters, Symbols to be used in Electrical Technology
IEC60034	Rotating Electrical Machines
IEC60050-411	International Electro technical Vocabulary Rotating Machines
IEC60072	Dimensions and Output Rating for Rotating Electrical Machines
IEC60085	Thermal Evaluation and Classification of Electrical Insulation
IEC60445	Identification of Equipment Terminals and of Terminations of System Certain Designated Conductors Including General Rules of an Alphanumeric
BS 5512	Dynamic Load Ratings and Rating Life of Rolling Bearing
BS 6121	Mechanical Cable Glands

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NEMA

MG1-1998 Motor and Generators

1.6. Quality Management and Records

- The project shall be administered using an accredited Quality Management System conforming.
- References to the agreement of materials, workmanship, methods, etc. throughout this Specification shall be interpreted as requiring the agreement of the Employer.
- The Contractor shall maintain all records necessary under this Specification, including quality records as appropriate.
- Copies of all site records shall be available to the Employer.
- The Contractor shall supply the Engineer with all information necessary for the Health and Safety File including as-built drawings and records, maintenance schedules, operation and maintenance manuals, within the time specified in the contract, after substantial completion of the Works. Information shall be provided in the agreed format.

1.7. Reference Codes and Standards

The latest revision and edition of the following codes and standards shall constitute the minimum requirements of this specification, where applicable. In any case of discrepancy between the codes and standards and specifications, the requirements shall be considered according to the EMPLOYER's written approval.

1.8. Measurement units

SI units shall be applied to the measuring units.

1.9. Language

All drawing design information, Documentation, Operation, and Maintenance Instructions and correspondence shall be in English.

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2. Design Data

2.1. Working Time

The working time is as follows:

Description	Value
Calendar days per year	365
Production days per year	320
Number of shifts per day	3
Working hours per shift	8
Utilization factor	0.85

2.2. Site Condition

For detail description refer to site condition with document number, 12002-D-PR-DOC-303-GNL-001.

3. DESIGN REQUIRMENTS – WORK INCLUDED

3.1. general

The thickener should be used to store and gravity thicken copper tailing from the copper concentrator process. Excess supernatant will gravity flow from the tank via a weir assembly and also through decanting via sidewall nozzles controlled by valves.

The thickener should be guaranteed to meet process and throughput requirements outlined in this specification and attached datasheet.

The thickener should be designed for continuous, 24 hours a day operation. The thickener shall be of the Manufacturer's standard design for the specified service. Replacement parts for standard components shall be readily available.

The equipment shall be designed for a minimum life of 30 years.

The equipment shall be designed for open air installation where required.

The unit shall meet the performance requirements as defined in the contract.

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The equipment shall be designed for productive 'Total Cost of Ownership' and throughput, ease of inspection, cleaning, repairs and maintenance and for operation in which continuity of service is a major consideration.

All components of the thickener shall be designed to withstand the effects of mechanical and electrical overloading.

The thickener mechanisms must be capable of starting under load after thickener tank and contents have been standing for 24 continuous hours with rakes lifted out. This will not apply to peripheral drive thickeners.

All inspection and lubricant application points shall be readily accessible, safe-guarded from hazards and moving machinery, plant and equipment.

The design, material and construction shall meet all requirements for thickening the stated liquid at the rate and conditions specified in the data sheets.

The design material and construction shall be in accordance with the Vendor's standard practice or recommendation for the intended service unless the requirements listed below and in the data sheets preclude their use.

- A set of special tools necessary for the assembly and disassembly of the equipment package shall be furnished.
- Operating, commissioning spares and first filling. Should also undertaking supply of spare parts.

3.2. Thickener Mechanism

- High-rate thickener type balanced planetary gearbox type centre mechanism shall have an operational torque rating as indicated in data sheet as the minimum requirement
- Raking arms shall be provided with protection from either abrasion or corrosion or both depending on the fluid or slurry characteristics as

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defined in the contract. The wet end shall be designed to handle settling solids.

- The thickener mechanism shall be a full bridge Thickener type (with lifting mechanism) suitable for operation in purchaser's size as indicated in Data sheet.
- Overload protection, mechanical, electrical or both shall be provided to prevent damage to the rake because of jamming due to settled solids or foreign material.

3.3. Drive Mechanism

The drive mechanism shall be designed to permit bearings liner strips and internal gears to be removed without requiring the removal of the walkway. Drive component selection shall be based on motor nominal power rating.

- Drive unit shall be one of the following types:
 - 1- Hydraulic drive including hydraulic power pack connected to hydraulic motor and planetary gearbox to reach the final rake required speed.
 - 2- Mechanical drive include motor base plate and gear motor with roller chain drive and guard coupled to planetary gearbox. Drive shall be arranged to give a final rake speed nominated in data sheet.
- The middle gearboxes shall not be worm gearbox type.
- Motor shall conform to the requirement stated in the standard electric motor specification included with this specification. Motor starters will be furnished by purchaser.

3.4. Overload protection

- The thickener mechanism shall include provisions to protect all components from damages due to overloading.

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- Vendor shall furnish an under speed alarm switch to operate in conjunction with a drive shaft pin via a controlled coupling device to warn operator.

3.5. Main shaft

Wear protection shall be provided where for the section that will be exposed to abrasive or corrosive fluids. Main shaft bearings shall have a minimum life a23 L10 life of 60,000 hours. Other life factors, including such factors as the SKF or similar advanced life theory factor, shall not be applied. The thickener shall have a mild steel centre piece.

3.6. Centre Cage

Rotating centre cage shall be fabricated in rolled mild steel sections, complete with lower guide bearing blocks designed for an operating torque as indicated in data sheet.

3.7. Feed well

Feed well shall be manufactured in mild steel having a wall thickness of minimum 0.25" and a base thickness of minimum 0.25". Thickener Rubber lining shall be done by supplier. Gum stock high quality natural rubber with Soft chemical cure compound suitable for wet abrasion is used for rubber lining.

3.8. Discharge Cone

A discharge cone suitable for the mating scraper shall be provided by the Vendor for installation in the Purchaser's tank.

3.9. Under solution parts

A set of cable-torque type under solution parts shall be fabricated in mill steel comprising two long hinged tubular construction take arms with welded-on rake blades, two fixed stub arms with blades and two short torque or drag arm shall be supported by a fixing to the lower portion of the

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centre cage structure and suspension ropes to the upper portion. Torque shall be applied to each take arm by means of these fixing and by drag ropes connected to the torque arm. All necessary turnbuckles shackles and ping shall be furnished by vendor. The support cables shall be pre-stressed.

3.10. Raking arms lifting device and torque control

Thickeners shall have means for measuring and controlling raking arms torque. The measured signal must be capable of being used by the rake lifting mechanism or by any other process that can be used to control the raking arm torque.

Raking torque shall be measured and controlled to prevent damages to the rake during high load events, raking shall be fitted with raking life mechanism to dal with transient high load conditions.

3.11. Tank

The tank design shall be based on concrete material as per Supplier. Approval full bridge to be constructed by mild steel.

3.12. Underflow pumps

Pumps shall be standard designs from reputable suppliers. These shall be approved by the Engineer in writing so as to ensure standardisation (plant, group, geography etc).

Production flow and thickener capacity determines pump performance characteristics.

Standby redundancy shall be provided with automatic switching in the event of failure of active units. For more detail see document Centrifugal Slurry Pump Specification and Underflow Centrifugal Pump Data Sheet.

3.13. Auxiliaries

Auxiliaries such as hydraulic or pneumatic systems shall be standard designs from reputable suppliers. These shall be approved by the

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Engineer in writing so as to ensure standardization (plant, group, geography etc.). Supply of reclaimed water and fresh water shall be considered for underflow thickener.

3.14. Lifting equipment

Provision for lifting equipment shall be made for open air installations without overhead Thickeners infrastructure / facilities.

3.15. Walkway

Access walkways shall be provided for operation and maintenance of the equipment. The walkway shall have hand rails on both sides the hand rails shall be a minimum of 42 inch in height and furnished with an intermediate rail. Steel toe plates-approximately 6 inches height shall be furnished for the entire length of the walkway. All components of the walkway shall be ASTM A-36 carbon steel, or approved equal.

Protection standing up in all walkway and the floor must be non-skid.

3.16. Lubricating/ Greasing

Grease lubrication fittings shall be standard hydraulic type and readily accessible. all lubrication oil sumps shall be provided with level gauges. All bearings shall be adequately lubricated to protect against corrosion during shipment.

Automatic or a single greasing point shall be provided.

Where grease lines are used:

Individual lines shall be run to each grease application point.

Individual lines shall be fed from independent points of application and lines shall not contain branches and not be fed from a single point on a common manifold.

Lines shall be led to safe conveniently located safe areas for grease application.

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Each line shall be labelled to indicate which application point it feeds.

3.17. Automatic level control

Instrumentation for Automatic level control, indication and alarms shall be provided for the tanks.

3.18. Electrical

The Contractor shall indicate all electrical requirements for the provision of control elements, interlocking, lubrication and hydraulic oil cooling system.

Motor starter and control system design shall be approved by the Engineer.

It shall be possible to operate the motor from the following three areas:

Local operation, from each individual motor, including for stand by equipment

From local control panel

From central control room

Provision shall be made for selection between local and remote mode in or at each area.

All panels shall be furnished with isolation and lock-out facilities.

Selection of local operating mode shall require authorization from the control room (remote mode). The control room (remote mode) shall remain deactivated until the local panel has been switched back to remote mode.

Local or field positive isolation facilities shall be provided within sight of the motor.

Motor and other electrical components shall be supplied based on Technical Specification for Package Units as minimum specification (Technical Specification for Package Units).

3.19. Electrical components

Electrical equipment selection shall be approved by the Engineer in writing.

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The motor rating and characteristics shall be suitable to start and run the driven equipment in an ambient temperature and at the elevation given in the contract.

Low voltage motors shall comply with Project Specification, Electrical Induction Motors: Low Voltage Three Phase Cage and Wound Rotor (slip Ring) Motors.

3.20. Instruments and control

- Supplier shall provide a complete set of instruments for the thickener drive system and its auxiliary equipment's.
- PLC interlocks will be active for all modes of control including local operation
- All instrument displays shall be in the metric system (SI) units
- Instrumentation equipment design shall comply with Project Specification, Packaged Equipment & Plants

3.21. Thickener instrumentation

The instrumentation requirements shall include, but not be limited to, the following:

- Rake high and low proximity switches
- Rake height position transmitter
- Rake motion sensor
- Torque monitoring and protection systems for the rake mechanism
- Alarm to PLC for stop of rakes
- Lube system temperature transmitter, oil level transmitter, pressure transmitter and torque transmitter.
- Ultrasonic bed height level transmitter and a digital bed level indicator, which will be protected from direct sunlight. The transmitter emits a pulse from the transducer towards the liquid /pulp bed interface. This

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pulse is reflected from the liquid /pulp bed interface and received by the transducer. The amplifier processes the return signal or echo. The transducer is pulsed every second, regardless of the loop current. The time between pulse and echo reception is processed using the speed of sound through a liquid (corrected for ambient temperature for the application) to calculate the distance measured. After every echo is processed the display is updated to read the bed level in meters or%.

- Flow meter: The Contractor shall provide flow meter for measuring the thickener underflow flow which is used in conjunction density meter for measuring dry solid rate.
- Flocculent and / or coagulant dosing and optimizers for all thickener units including clarity monitoring instrumentation. Vendor to submit a takeout price for these units
- Bed load pressure transmitter
- Control and protection system with interlocking elements and ancillary facilities necessary to start and stop the thickener without damaging the mechanical transmission and auxiliary system
- Underflow pump and VFD: The Contractor shall provide underflow pump equipped with VFD for controlling the thickener discharge. The underflow density and level of sludge will be used to adjust underflow pump speed.

All instruments shall be selected to suit the site instrument standards; where this is not possible due to special requirements the exceptions shall be approved by the Engineer in writing.

Refer to Technical Specification for Package Units as minimum specification of VFD (Technical Specification for Package Units).

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3.22. Thickener control system

The control and protection system shall be a completely integrated control system as per Project Specification

The Contractor shall supply Control Logic Narratives; Control Logic Diagrams; P&ID diagrams; instrument datasheets; alarms and interlock settings; wiring diagrams between supplied instruments and supplied junction boxes; Instrument list (with manufacturer and model) and Instrument and Equipment manuals.

3.23. Local control panel

Local control panel is not normally required however should a local control panel be required the field control panel shall be supplied for local operation next to the thickener.

The panel shall include, but not be limited, to the following:

- Local remote mode indication
- Stop-Start push button, with a locking system to avoid unsafe starting
- Local control panel shall be NEMA 4 or equivalent IEC.
- Two conditions general alarms and alarm acknowledge
- Warning – tone 1
- Shutdown – tone 2
- Emergency shutdown push button
- Thickener status indicating lights
- Main power ON indication
- Thickener ready for operation
- Horn for start-up warning
- Alarm enunciator system
- Field wiring to and from Local Control Panel as per Project Specification.

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Refer to Technical Specification for Package Units as minimum specification of Local control panel (Technical Specification for Package Units).

3.24. Lifting Lugs

All heavy equipment shall be furnished with lifting lugs for installation and maintenance requirements.

Lifting lugs shall be:

- Positioned to give maximum balance with an even weight distribution where possible to minimize handling hazards
- Designed to have a safe working load of at least six times the design load suspended by it
- Manufactured in accordance with drawings which have been approved by an Engineer registered with the appropriate national body
- Designed for use with standard shackles, Grade S
- Shown on drawings together with slinging details. Special attention shall be given to lifts using more than three lugs to ensure proper load distribution. Unequal sling and lug loads caused by differences in nominally equal sling lengths and sling stacking arrangements on hooks shall be avoided
- Permanently fixed to all items requiring removal for inspection and maintenance
- For fabricated lifting lugs all welds shall be examined 100% using UT and wet MT. Acceptance criteria shall be in accordance with the registered Engineers approved design requirements.
- The maximum allowable sling angle from the vertical shall be determined and marked at all lifting points.
- Removable lugs shall be bolted to each component in the shop prior to shipment and remain attached until erection work is completed.

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3.25. Inlet Feed Well

Inlet Feed Well will be of suitable diameter to reduce flow velocity and prevent short circuiting. The feed well should be supported off the bridge support.

3.26. Rake Assembly

The solids which settle in the thickener should be scraped to a centrally located well by the Rake Assembly. Thickener should have a top mounted fully suspended rake, to move the settled slimes to a center discharge port located in the tank cone bottom. Weir Assembly.

3.27. Weir Assembly

Clarified flow should overflow into the weir assembly. A carbon steel and painted protection weir trough with adjustable weir plates will be provided to adjust for even overflow of the supernatant around the entire circumference of the thickener. The weir trough should be welded to or integral with the thickener wall.

3.28. Drive Unit

The drive unit for rotating of rake mechanism shall be designed based on the following types:

- The electric motor drive (400 VAC, 3 phases, 50 Hz TEFC motor) coupled with series of gearboxes (including main planetary gearbox) through to the main rake's shaft. The motorized rake drive should be supported above the liquid surface eliminating all submerged rotating seals and bearings.
- Hydraulic motor coupled with planetary gearbox drive by hydraulic power pack continuously measuring the torque by hydraulic pressure and positioning of rake by hydraulic lifting system.

Gears must be designed for efficient power transmission, with reserve strength for peak loads and moments. Adequate support structures must be

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provided for all drive and bearing components to prevent deflection and maintain accurate alignment under peak load.

All lubricating oils and fluids must be completely prevented from contaminating the underflow solids as the recovered water will be returned to the process.

3.29. Bridge Support

The drive unit support and bridge should consist of structural members spanning the top of the drive including cross-supporting members, handrails and walkway. The bridge walkway should be fabricated with corrosion resistant material.

4. MAINTENANCE

- The Thickener will be designed in order to minimize maintenance and make unavoidable maintenance safe, quick and easy.
- In order to minimize the frequency of maintenance, the temporary table of inspection and maintenance of Thickener components, contained in the offer documentation, must be drawn up in terms of previous engineering experience and subsequent improvements.
- Every component must be easy to handle and equipped with hooks to allow them to be properly balanced when lifted.
- Components which need frequent maintenance must be easily accessible and they must not need special tools.

5. INSPECTION & TESTING

The purpose of the tests and inspections outlined in this spec. is to verify manufacturing process as well as the accordance with the related purchaser's specification, supplier's specification and drawings and fulfilment of the designated function and safety. Inspections should be performed at supplier's premises and witnessed by employer's representative.

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Before start of manufacturing, supplier should propose test / inspection procedures and the judgment criteria in accordance with the relevant paragraphs of internationally acceptable standards to gain employer's approval.

Supplier should propose details of employer's witness inspection to gain employer's approval. Suppliers should furnish purchaser with "inspection/test timetable" which includes sequence and period of inspections / tests.

The equipment package should perform substantially as well on its permanent foundation as it did on supplier's test stand.

Inspection procedure should include the following items:

	INSPECTION / TEST	APPLICATION & PURPOSE
1	Material (Mill Certificate)	For shell, shaft, bearing housing &
2	Non-destructive Examination	
2.1	Liquid Penetrate	Corner of fillet welding
2.2	Ultrasonic Examination	For forged steel shafts
3	Dynamic Balance	For rotating components when required
4	Performance Test	To ensure proper operation of mill & other auxiliary equipment
5	Mechanical Running Test	To bearing temperature, vibration and noise & ...
6	Visual Inspection	Checking construction against assembly drawings
7	Dimensional Inspection	For the Whole assembly, shell, shaft, inlet and outlet flanges
8	Final Inspection prior to packing	Just before packing, visual check, rust prevention check and quality check should be performed.
9	packing Inspection	To check packing material, marking for shipping and caution, packing style, detailed packing list
10	Rust Prevention & Painting Inspection	Checking surface prevention, thickness of paint color coding, adhesion test, number of coat intervals

Test certification of equipment and all inspection documents should be submitted by vendors and should be confirmed by main contractor and consultant.

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Note: For electrical components, minimum Inspection and test which is mentioned in Refer to Technical Specification for Package documents shall be done. (Technical Specification for Package Units).

6. SURFACE PREPARATION & RUST PREVENTION

Painting system should be carried out in accordance with manufacturer's standard. Supplier should submit detailed rust prevention and painting procedure and application list for the equipment package, to approve by employer. Supplier should propose procedures to prevent rusting of warehouse stored equipment, during long term storage installation, and during long term suspension of operation.

Least painting requirement should be as project PAINTING SPECIFICATION

7. NAMEPLATE

- Nameplate, rating and identification plate should be permanently attached to equipment and motor in a location which makes them easily readable.
- Nameplate should be engraved with the manufacturer's name and include the manufacturer's serial number.
- Rating plate may be combined with the nameplate and should include technical details of the loading conditions under which it is designed to operate.

8. DOCUMENTS

Nameplate, rating and identification plate should be permanently attached to

- General arrangement drawings.
- Information defining throughput rate as a function of feed density and thickener underflow density.
- Thickener static and dynamic loads
- Electrical motor interface.

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- Electrical motor power and torque requirement.
- Instrumentation data sheets.
- Control System Functional Specification
- Information required by the plant designer, in order to ensure a smooth and adequate integration of the thickener into the plant.
- Minimum clearance height required above the thickener to be able to remove the rake(s) and rake lifting mechanism as one assembly or separately dependent upon size as per supplier recommendation.
- Operating, maintenance and parts manuals.
- Recommended spare parts for two years' operation.
- Provide mass and outside dimensions of each component to be lifted during transport, erection and for maintenance. The heaviest component, longest and bulkiest component will determine the lifting requirements for construction and maintenance.
- P&ID Drawing

9. SPARE PARTS

The VENDOR shall submit the following with his quotation:

- A set of spare parts for commissioning and start-up.
- A priced list of critical spares for unplanned maintenance (insurance spares).
- A priced list of recommended spares for 24 month's operation

10.Special Tools

The VENDOR shall submit, with his quotation, his recommendations for one set of special tools required for installation and maintenance of the supplied equipment.

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11.Site Services (Packing, Preservation, and Transportation)

- The equipment shall be painted in accordance with the CLIENT PROCEDURE/ VENDOR'S standard which shall be proven and established for the service conditions.
- Packaging and protection for shipment shall be performed in accordance with the approved procedure. Particular attention shall be given to the protection of flanges, which shall have substantial wood, metal, or plastic blanks bolted on. If the CONSULTANT gives a concession allowing the use of screwed terminations, then they shall be plugged or capped. Transport to the site will be by road and sea. Some of the journeys will be on rough tracks (un-metaleed roads).
- Supplier should submit “packing procedure and specifications” and timetable for packing and delivery for employer’s approval.
- All equipment items should be packed as per procedure and delivered the items to site.
- Packing should be suitable to withstand 2 years of open area storing.
- The documents necessary for final inspection and release for packing will include, but are not limited to, the following:
 - Reports on tests performed
 - Materials certificates and chemical analysis certificates.
 - Air leak test.
 - Results of non-destructive tests, together with the pertinent sketches.
 - Supply list of equipment.
- The VENDOR shall submit details of his standards and procedures for any necessary temporary corrosion protection to the CONSULTANT for review. Equipment may be stored.

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12. Guarantee and warranty

- The VENDOR shall guarantee the Package for the duty, emissions, noise levels and utility consumption as specified on Equipment Data Sheets, and for safe and reliable operation.
- The VENDOR shall guarantee the suitability of the materials of construction for the duties required, even if the CONSULTANT has specified the type and grade of material to be used.
- The VENDOR shall guarantee all equipment and components against design fault, defective or improper materials, poor workmanship and failure during normal usage.
- The Supplier/ Vendor/ Manufacturer shall warrantee the provision of spare parts to the EPC subcontractor for a minimum period of 15 years from the date of dispatch.
- The Guarantee period is according to main contract.